

36 WEEKS • FOUR TERMS

Answer & teaching guide

This guide accompanies the ICONIC GAMES printable workbook. Use it after an attempt, or to support teaching. It is not the answer key for the different online programme.

How to assess

Maths: accept equivalent fractions, exact values or appropriately rounded decimals with correct units. Look at the method as well as the final number. Reading: accept defensible responses grounded in the printed evidence. Writing and application: use the criteria below, not a single preferred opinion.

Developing

The learner states an idea but needs support to link evidence, explain methods or qualify claims.

Secure

The learner uses relevant evidence, shows a valid method and gives a clear, purposeful explanation with a limitation.

Extending

The learner compares alternatives, tests assumptions, evaluates a counterpoint and revises a claim or design in response to evidence.

Keep feedback actionable

Name one strength, one specific improvement and a next step. Do not score learners against each other. Reading length, prior knowledge and learning support affect the time needed.

Safeguarding and safety

Keep wellbeing, relationships and money scenarios fictional. Do not request personal disclosure. These are paper science and engineering models; do not conduct chemical, mains-electricity, hazard or expedition activities as homework. Use trusted-adult support when questions raise a concern.

FOR TEACHERS AND SUPPORT PEOPLE

Curriculum connections & sources

English: vocabulary in context, explicit and inferential comprehension, evaluating evidence and perspectives, organising purposeful writing, sentence and paragraph control, revision, oral explanation and reflection.

Mathematics & statistics: number and operations, percentages and proportional reasoning, algebra and patterns, measurement, geometry, statistics and probability. Spiral practice revisits multiple strands rather than claiming each case covers an entire strand.

Science, social studies and technology: evidence, modelling, systems, historical interpretation, rights and participation, design criteria, testing and trade-offs. These provide supplementary contexts; check local programme coverage and current implementation guidance.

Primary curriculum references · checked October 2026

<https://newzealandcurriculum.tahurangi.education.govt.nz/nzc---english-phase-3-years-7-8/5637290836.p>

<https://newzealandcurriculum.tahurangi.education.govt.nz/nzc---mathematics-and-statistics-phase-3-years-7-8/5637289333.p>

Independent resource. Curriculum alignment describes supported learning; it does not imply Ministry approval, formal assessment validity or complete coverage. Historical summaries and simplified science models should be discussed with their limitations.

Source and authorship note

Weekly case passages, teaching notes and evidence are adapted from ICONIC GAMES' senior Homework Club plans. Scenario datasets, organisations and case narratives are fictional unless a historical event or scientific explanation is clearly identified. Paper briefs and spiral maths tasks are purpose-built for this workbook. No learner has to locate an online file or simulator to answer the core tasks.

Marking writing and application

Look for: a clear purpose and audience; accurate use of two or more printed details; reasoning that connects evidence to the claim; a realistic limitation; coherent organisation; revision and careful language. For Year 8, also look for an alternative or counter-argument and evaluation of an assumption or trade-off. Accept different justified decisions.

PRIMARY SOURCES FOR SUPPORT PEOPLE

Background reference notes

These optional references support teaching discussions. Learners do not need to visit them to complete the workbook. The printed historical passages are summaries; scientific and civic models deliberately simplify real systems.

Voting rights in Aotearoa

Communal land ownership limited Māori participation under early property qualifications. Separate Māori seats were established in 1867; the first elections for them were in 1868.

<https://nzhistory.govt.nz/page/maori-and-vote>

Suffrage milestones

Discuss the 1879 and 1893 changes alongside remaining differences in access and influence. A legal entitlement alone does not show equal power.

<https://nzhistory.govt.nz/politics/womens-suffrage/brief-history>

Parliament and government

Distinguish lawmaking, administering government and interpreting law. New Zealand's parliamentary system also has overlap: Ministers are members of Parliament.

<https://www3.parliament.nz/en/visit-and-learn/how-parliament-works/our-system-of-government/>

Earthquake mechanisms

An earthquake releases accumulated stress along a fault. Hazard evidence does not provide an exact prediction of the time of a future earthquake.

<https://www.geonet.org.nz/earthquake/faq>

Seasons

Earth's axial tilt changes sunlight angle and day length across the year. The two hemispheres have opposite seasonal patterns.

<https://spaceplace.nasa.gov/seasons/>

TERM 1 • WEEK 1

A Post Goes Viral

Maths: answers and methods

1. $10\% \text{ Increase} \div \text{original} \times 100 = 8 \div 80 \times 100 = 10\%$.
2. $20\% \text{ Increase} \div \text{original} \times 100 = 28 \div 140 \times 100 = 20\%$.
3. 36 and 24. 15 equal parts; each part is 4. Multiply each ratio number by this amount.
4. $x = 9$. Subtract 3, then divide by 5; check $5 \times 9 + 3 = 48$.
5. Perimeter 40 cm; area 91 cm^2 . Perimeter = $2(\text{length} + \text{width})$; area = $\text{length} \times \text{width}$. Units differ.
6. $15\% \text{ Increase} \div \text{original} \times 100 = 18 \div 120 \times 100 = 15\%$. A valid independent check, estimate or diagram is required.
7. $150\% \text{ Increase} = 5,000 - 2,000 = 3,000$; $3,000 \div 2,000 \times 100 = 150\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: By lunchtime, a short night-sky video had been shared thousands of times.
2. Compare these details: The oldest available upload includes a date and location but no explanation of what caused the light. / A named astronomy educator explains two plausible causes and clearly states what extra evidence would be needed.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a cautious news update about the light in the sky. Separate what the clip establishes from what reposts claim. Explain what extra evidence is needed.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 · WEEK 2

The Algorithm

Maths: answers and methods

1. $x = 4$. Subtract 3, then divide by 4; check $4 \times 4 + 3 = 19$.
2. $x = 3$. Subtract 5, then divide by 7; check $7 \times 3 + 5 = 26$.
3. Mean 6; median 5; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
4. 70° . Angles in a triangle total 180° ; $180 - 50 - 60$.
5. 27 sales. Contribution = \$4; $108 \div 4 = 27$. Round UP to whole sales.
6. $x = 10$. Subtract 4, then divide by 6; check $6 \times 10 + 4 = 64$. A valid independent check, estimate or diagram is required.
7. 5 Substitute the behaviour counts into the stated score: $3 \times 1 + 2 \times 1 - 2 \times 0 = 5$.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional video app records signals such as whether a clip is opened, how long it is watched, whether it is liked, saved, shared or skipped, and which accounts are followed.
2. Compare these details: A learner watches nearly all of three science clips. This is a strong signal that the system may rank similar clips higher. / This claim treats a prediction system as if it understands a person's thoughts. The statement reaches beyond what the data shows.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain an input $\rightarrow$ rule $\rightarrow$ output chain for a recommendation feed. Use one behaviour signal from the case and suggest one way to make a feed more varied.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 3

Influence Machine

Maths: answers and methods

1. Saving \$12.00; price \$48.00. Find the percentage of the original price, then subtract the saving.
2. Saving \$21.00; price \$49.00. Find the percentage of the original price, then subtract the saving.
3. 90° . Angles in a triangle total 180° ; $180 - 50 - 40$.
4. Revenue \$200; profit \$10. Profit = revenue – variable costs – fixed costs = $200 - 120 - 70$. A negative result is a loss.
5. Mean 6; median 5; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
6. Saving \$22.50; price \$67.50. Find the percentage of the original price, then subtract the saving. A valid independent check, estimate or diagram is required.
7. 40% Saving = $\$120 - \$72 = \$48$; $48 \div 120 \times 100 = 40\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional company launches an advertisement for PulsePods.
2. Compare these details: The ad says “was \$120, now \$72”. Those numbers can be checked to see whether the 40% discount claim is accurate. / This line uses social pressure and fear of missing out rather than evidence about product quality.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Rewrite the promotion as an honest advertisement. Keep an engaging technique, explain the real price and remove unsupported urgency or claims. Add a note explaining your edits.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 4

Money Moves

Maths: answers and methods

1. Revenue \$200; profit \$20. Profit = revenue – variable costs – fixed costs = 200 – 120 – 60. A negative result is a loss.
2. Revenue \$140; profit \$-10. Profit = revenue – variable costs – fixed costs = 140 – 60 – 90. A negative result is a loss.
3. Circumference 37.68 cm; area 113.04 cm². Circumference = $2\pi r$; area = πr^2 . Radius is half the diameter.
4. 32 and 24. 14 equal parts; each part is 4. Multiply each ratio number by this amount.
5. 4 pages/min; 9 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
6. Revenue \$220; profit \$0. Profit = revenue – variable costs – fixed costs = 220 – 140 – 80. A negative result is a loss. A valid independent check, estimate or diagram is required.
7. 6-pack at \$2.50 each Six-pack: $\$15 \div 6 = \2.50 each. Four-pack: $\$11 \div 4 = \2.75 each. The six-pack has the lower unit price.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional learner has \$120 available for a short-term money plan.
2. Compare these details: A jacket marked “25% off \$80” should cost \$60 because 25% of \$80 is \$20. / Setting money aside first changes how much remains for optional spending and makes the trade-off visible.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Recommend a fictional spending plan using the costs in the sources. Separate needs from wants, protect savings and explain an opportunity cost. State any assumption about money available.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 5

Inside Out

Maths: answers and methods

1. Mean 10; median 9; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
2. Mean 6; median 5; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
3. 15 percentage points; 42.9% relative increase. $50 - 35 = 15$ points. Relative change = $15 \div 35 \times 100$. These measures answer different questions.
4. Perimeter 36 cm; area 56 cm². Perimeter = $2(\text{length} + \text{width})$; area = length $\times$ width. Units differ.
5. $x = 3$. Subtract 4, then divide by 5; check $5 \times 3 + 4 = 19$.
6. Mean 12; median 11; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum. A valid independent check, estimate or diagram is required.
7. Mean 7.6 hours, range 3 hours Total = $7 + 8 + 6 + 9 + 8 = 38$; mean = $38 \div 5 = 7.6$ hours; range = $9 - 6 = 3$ hours.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional learner has had a busy week.
2. Compare these details: People do not all develop at exactly the same age or speed. / Asking a trusted adult or qualified professional is a reasonable next step when someone is worried.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write advice for a fictional learner. Offer three low-risk wellbeing supports, explain why people vary and include trusted-adult support. Do not disclose personal experiences.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 6

Safe • Unsure • Not OK

Maths: answers and methods

1. $P(\text{red}) = 4/5$; $P(\text{not red}) = 1/5$. Count equally likely tokens, not colour names; probabilities add to 1.
2. $P(\text{red}) = 1/2$; $P(\text{not red}) = 1/2$. Count equally likely tokens, not colour names; probabilities add to 1.
3. Cost \$5.16; change \$4.84. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
4. 3300 g; one portion 660 g. $1 \text{ kg} = 1,000 \text{ g}$; divide the converted mass by 5.
5. 6500 g; one portion 1300 g. $1 \text{ kg} = 1,000 \text{ g}$; divide the converted mass by 5.
6. $P(\text{red}) = 1/2$; $P(\text{not red}) = 1/2$. Count equally likely tokens, not colour names; probabilities add to 1. A valid independent check, estimate or diagram is required.
7. $75\% \ 18 \div 24 \times 100 = 75\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: Kindness, attention, gifts and friendship are not automatically warning signs.
2. Compare these details: A fictional learner says they do not want their photo shared. A friend accepts the answer and deletes the draft post. / A friend checks in, offers help and accepts the learner's choices without asking for secrecy or something in return.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a safe-response plan for the fictional pressure scenario. Use boundary, consent and privacy accurately. Include a trusted adult and a way to stop unwanted contact.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 · WEEK 7

The Newsroom

Maths: answers and methods

1. $15\% \text{ Increase} \div \text{original} \times 100 = 30 \div 200 \times 100 = 15\%$.
2. $25\% \text{ Increase} \div \text{original} \times 100 = 30 \div 120 \times 100 = 25\%$.
3. $P(\text{red}) = 4/5$; $P(\text{not red}) = 1/5$. Count equally likely tokens, not colour names; probabilities add to 1.
4. $20\% \text{ Increase} \div \text{original} \times 100 = 20 \div 100 \times 100 = 20\%$.
5. Cost \$5.36; change \$4.64. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
6. $20\% \text{ Increase} \div \text{original} \times 100 = 20 \div 100 \times 100 = 20\%$. A valid independent check, estimate or diagram is required.
7. $25\% \text{ } 60 \div 240 \times 100 = 25\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: Both fictional reports agree on several facts: the trial happened on Saturday, 240 people attended, and a voluntary survey received 60 responses.
2. Compare these details: A fictional council trial attracted 240 visitors on Saturday. The report leads with strong attendance and quotes organisers describing the event as a success. / A social post says “Everyone loved the trial!” even though the available survey includes dissatisfied respondents.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Write a balanced bulletin from the evidence. Lead with established facts, label uncertainty and explain why a survey cannot speak for everyone.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 8

Creator Mode

Maths: answers and methods

1. 12 and 16. 7 equal parts; each part is 4. Multiply each ratio number by this amount.
2. 24 and 24. 12 equal parts; each part is 4. Multiply each ratio number by this amount.
3. 180 km. Multiply map distance by scale: 9×20 .
4. 25, 30; term $n = 5n + 0$. Add 5 each time; the n th term is $5(n-1)+5$.
5. 1.5 hours = 90 minutes. Time = distance $\div$ speed = $7.5 \div 5$. This assumes a steady speed with no stops.
6. 20 and 20. 10 equal parts; each part is 4. Multiply each ratio number by this amount. A valid independent check, estimate or diagram is required.
7. 80% $72 \div 90 \times 100 = 80\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: A strong creator chooses a message that is both interesting and supportable.
2. Compare these details: In the fictional project, 72 of 90 participants completed the activity. That is 80%, not “almost everyone in the town”. / The statistic comes from the fictional project team’s attendance record and should be labelled as such.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Write a creator brief: audience, main message, accurate statistic and two design changes. Explain why each change improves trust or accessibility.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 9

Reality Check: The Final Mission

Maths: answers and methods

1. Mean 7; median 6; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
2. Mean 10; median 9; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
3. 3 pages/min; 12 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
4. 210 km. Multiply map distance by scale: 6×35 .
5. $51/52$ Use a common denominator for addition; divide by multiplying by the reciprocal.
6. Mean 9; median 8; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum. A valid independent check, estimate or diagram is required.
7. $25\% \ 90 \div 360 \times 100 = 25\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: The fictional event drew 360 entries, close to the organiser capacity of 400.
2. Compare these details: The fictional event recorded 360 entries. Organisers had planned for up to 400 people. / The fictional event log records three minor first-aid incidents and no emergency evacuation.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a final case judgement. Use three evidence items, distinguish attendance from satisfaction or safety, and explain one missing piece of evidence.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 1

The Aotearoa Files

Maths: answers and methods

1. -10°C . $-5 + 7 - 12 = -10$. Use a number line if useful.
2. -10°C . $-8 + 4 - 6 = -10$. Use a number line if useful.
3. 25% Increase $\div$ original $\times 100 = 25 \div 100 \times 100 = 25\%$.
4. 21 sales. Contribution = \$4; $84 \div 4 = 21$. Round UP to whole sales.
5. 60° . Angles in a triangle total 180° ; $180 - 55 - 65$.
6. -8°C . $-7 + 3 - 4 = -8$. Use a number line if useful. A valid independent check, estimate or diagram is required.
7. 12 years Subtract the earlier year from the later year: $1852 - 1840 = 12$. The elapsed time is 12 years.

Reading: evidence-based guidance

1. Anchor the response in the passage: Te Tiriti o Waitangi was first signed at Waitangi on 6 February 1840.
2. Compare these details: In Article 1 the Māori text uses “kawanatanga”; in Article 2 it guarantees “tino rangatiratanga” over lands, villages and taonga. These terms are central to later debate about authority and governance. / Modern historical accounts emphasise that the Māori and English texts are not exact translations and that differences between them have been debated ever since 1840.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Write an archive label explaining political authority in Aotearoa between 1840 and 1852. Refer carefully to the different Treaty texts and name a limitation of the evidence.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 2

After the Signing

Maths: answers and methods

1. 6 pages/min; 6 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
2. 9 pages/min; 12 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
3. -10°C . $-5 + 7 - 12 = -10$. Use a number line if useful.
4. Cost \$4.84; change \$5.16. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
5. $25\% \text{ Increase} \div \text{original} \times 100 = 25 \div 100 \times 100 = 25\%$.
6. 8 pages/min; 9 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate. A valid independent check, estimate or diagram is required.
7. 5 years Subtract the establishment year from the invasion year: $1863 - 1858 = 5$. The events are 5 years apart.

Reading: evidence-based guidance

1. Anchor the response in the passage: The New Zealand Wars cannot be explained by one event alone.
2. Compare these details: By 1858 the Pākehā population had grown larger than the Māori population. Expanding settlements increased pressure to acquire Māori land, especially in the North Island. / Under the New Zealand Settlements Act 1863, land was confiscated in several districts. About 607,500 hectares were ultimately affected, including land belonging to some Māori who had not fought against the Crown.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain a cause, an event and a consequence in the case. Use three sources and show why a single-cause explanation of conflict is incomplete.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 3

Who Gets a Say?

Maths: answers and methods

1. $15\% \text{ Increase} \div \text{original} \times 100 = 24 \div 160 \times 100 = 15\%$.
2. $25\% \text{ Increase} \div \text{original} \times 100 = 20 \div 80 \times 100 = 25\%$.
3. Perimeter 30 cm; area 44 cm². Perimeter = 2(length + width); area = length × width. Units differ.
4. 63 cm². Area = $\frac{1}{2} \times \text{base} \times \text{perpendicular height} = \frac{1}{2} \times 18 \times 7$.
5. 45 cm². Area = $\frac{1}{2} \times \text{base} \times \text{perpendicular height} = \frac{1}{2} \times 10 \times 9$.
6. $20\% \text{ Increase} \div \text{original} \times 100 = 40 \div 200 \times 100 = 20\%$. A valid independent check, estimate or diagram is required.
7. About 1.7% Use part $\div$ whole $\times 100$: $100 \div 5,849 \times 100 \approx 1.71\%$. Rounded to one decimal place, that is about 1.7%.

Reading: evidence-based guidance

1. Anchor the response in the passage: New Zealand gained representative institutions in the 1850s, but the early franchise was restricted.
2. Compare these details: The Act created an elected House of Representatives. Voters had to be male, aged 21 or over, and meet specified property ownership, lease or rental qualifications. / The property requirement for non-Māori men was removed in 1879. In 1893 adult women, Māori and Pākehā, gained the parliamentary vote.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain changes in voting eligibility. Use dates and rules in the evidence. Distinguish gaining a legal vote from having equal influence.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 4

Revolution!

Maths: answers and methods

1. -11°C . $-8 + 5 - 8 = -11$. Use a number line if useful.
2. -9°C . $-4 + 7 - 12 = -9$. Use a number line if useful.
3. 1.5 hours = 90 minutes. Time = distance $\div$ speed = $9 \div 6$. This assumes a steady speed with no stops.
4. Circumference 43.96 cm; area 153.86 cm^2 . Circumference = $2\pi r$; area = πr^2 . Radius is half the diameter.
5. 3,000.00 (rounded to 2 d.p.). Divide coefficients and subtract powers: $(6 \div 2) \times 10^3$.
6. -7°C . $-3 + 6 - 10 = -7$. Use a number line if useful. A valid independent check, estimate or diagram is required.
7. 43 days From 14 July to 14 August is 31 days, then 12 more days reaches 26 August. $31 + 12 = 43$ days.

Reading: evidence-based guidance

1. Anchor the response in the passage: By 1789 France was facing several connected problems.
2. Compare these details: Before 1789 French society was legally divided into estates. Clergy and nobility held privileges that distinguished them from the much larger Third Estate. / The National Assembly abolished feudal privileges on 4 August. The Declaration of the Rights of Man and of the Citizen was adopted on 26 August and stated principles including legal equality and rights.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain how a long-term pressure and a trigger contributed to the French Revolution. Include a consequence and reject an overly simple explanation.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 5

Factory World

Maths: answers and methods

1. 9 pages/min; 15 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
2. 5 pages/min; 6 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
3. Revenue \$180; profit \$0. Profit = revenue – variable costs – fixed costs = 180 – 100 – 80. A negative result is a loss.
4. Saving \$12.00; price \$28.00. Find the percentage of the original price, then subtract the saving.
5. $P(\text{red}) = 7/10$; $P(\text{not red}) = 3/10$. Count equally likely tokens, not colour names; probabilities add to 1.
6. 4 pages/min; 18 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate. A valid independent check, estimate or diagram is required.
7. 200% The increase is $36 - 12 = 24$ units per hour. Compare the increase with the original rate: $24 \div 12 \times 100 = 200\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: Industrialisation changed production, work and place at the same time.
2. Compare these details: In 18th-century Britain, many goods were still made in homes and workshops. Textile manufacturing then changed rapidly as mechanised production and factories expanded. / The 1833 Factory Act restricted the hours children could work in textile factories, barred factory work for children under nine and created a factory inspectorate to help enforce the rules.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Explain who could benefit from industrialisation and who could bear its costs. Use production and worker evidence; explain why output alone cannot measure wellbeing.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 6

Democracy Lab

Maths: answers and methods

1. Revenue \$220; profit \$50. Profit = revenue – variable costs – fixed costs = $220 - 140 - 30$. A negative result is a loss.
2. Revenue \$160; profit \$20. Profit = revenue – variable costs – fixed costs = $160 - 80 - 60$. A negative result is a loss.
3. Saving \$10.00; price \$30.00. Find the percentage of the original price, then subtract the saving.
4. Mean 8; median 7; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
5. Revenue \$180; profit \$0. Profit = revenue – variable costs – fixed costs = $180 - 100 - 80$. A negative result is a loss.
6. Revenue \$140; profit \$30. Profit = revenue – variable costs – fixed costs = $140 - 60 - 50$. A negative result is a loss. A valid independent check, estimate or diagram is required.
7. 55% Use part $\div$ whole $\times$ 100: $44 \div 80 \times 100 = 55\%$. So 55% of the fictional respondents chose the half-court option.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional community is deciding how to upgrade a public space.
2. Compare these details: Submissions allow people and groups to explain how a proposal may affect them and to provide reasons, evidence or alternatives. The number of submissions alone does not prove which view is held by the whole population. / A fictional online survey with voluntary responses can be useful for understanding respondents, but selection bias may limit claims about the whole community.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Recommend a public-space proposal from the evidence. Consider cost, user needs and representation. State what more you would need to know before approving it.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 7

Faultline

Maths: answers and methods

1. 60 km. Multiply map distance by scale: 4×15 .
2. 175 km. Multiply map distance by scale: 7×25 .
3. $x = 7$. Subtract 6, then divide by 3; check $3 \times 7 + 6 = 27$.
4. 1.5 hours = 90 minutes. Time = distance $\div$ speed = $9 \div 6$. This assumes a steady speed with no stops.
5. 41, 50; term $n = 9n - 4$. Add 9 each time; the n th term is $9(n-1)+5$.
6. 120 km. Multiply map distance by scale: 6×20 . A valid independent check, estimate or diagram is required.
7. 3 cm The map scale is 25 km for each 1 cm. Divide the real distance by 25: $75 \div 25 = 3$, so the radius is 3 cm.

Reading: evidence-based guidance

1. Anchor the response in the passage: Aotearoa New Zealand sits across an active tectonic plate boundary.
2. Compare these details: Aotearoa New Zealand lies across the boundary of the Pacific and Australian tectonic plates. Their interaction produces earthquakes, active deformation and volcanic activity in different parts of the country. / A social post says the latest small earthquakes prove a major earthquake will strike the town next Tuesday. The evidence shown cannot establish an exact future time, place and magnitude.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain plate movement $\rightarrow$ stress $\rightarrow$ fault movement $\rightarrow$ seismic waves. Use two observations and explain why evidence of activity is not an exact earthquake prediction.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 8

Edge of the World

Maths: answers and methods

- 1.5 hours = 90 minutes. Time = distance $\div$ speed = $9 \div 6$. This assumes a steady speed with no stops.
- 1.5 hours = 90 minutes. Time = distance $\div$ speed = $12 \div 8$. This assumes a steady speed with no stops.
- 20 cm². Area = $\frac{1}{2} \times \text{base} \times \text{perpendicular height} = \frac{1}{2} \times 8 \times 5$.
- 1,750.00 (rounded to 2 d.p.). Divide coefficients and subtract powers: $(7 \div 4) \times 10^3$.
- Circumference 50.24 cm; area 200.96 cm². Circumference = $2\pi r$; area = πr^2 . Radius is half the diameter.
- 1.5 hours = 90 minutes. Time = distance $\div$ speed = $10.5 \div 7$. This assumes a steady speed with no stops. A valid independent check, estimate or diagram is required.
- $\frac{2}{3}$ Write the completed distance as a fraction of the full route: $5.6 \div 8.4 = 56 \div 84 = 2 \div 3$. The group completed $\frac{2}{3}$ of the route.

Reading: evidence-based guidance

- Anchor the response in the passage: The fictional expedition map shows a valley route climbing steadily toward a high saddle before dropping to a shelter.
- Compare these details: The fictional route is 8.4 km long and climbs from 620 m to 1,180 m before descending to the shelter. / A map and forecast support planning, but they cannot guarantee real-time track, river or weather conditions. The simulation is not real-world trip advice.. Accept a justified support, challenge or qualification; evidence does not need to agree.
- Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
- Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write an expedition planning note from the supplied conditions. Explain one landscape process, one route concern and a reason to alter or abandon a plan.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 9

The Exhibition

Maths: answers and methods

1. 24 and 16. 10 equal parts; each part is 4. Multiply each ratio number by this amount.
2. 36 and 24. 15 equal parts; each part is 4. Multiply each ratio number by this amount.
3. (2, 1); 3 left, 4 up. Add the horizontal and vertical changes separately.
4. -12°C . $-8 + 6 - 10 = -12$. Use a number line if useful.
5. -5°C . $-4 + 3 - 4 = -5$. Use a number line if useful.
6. 32 and 20. 13 equal parts; each part is 4. Multiply each ratio number by this amount. A valid independent check, estimate or diagram is required.
7. 41.7% Five of the 12 panels hold source evidence. $5 \div 12 \times 100 = 41.666\ldots\%$, which rounds to 41.7%.

Reading: evidence-based guidance

1. Anchor the response in the passage: An exhibition is an argument made through selection, sequence and explanation.
2. Compare these details: A fictional 1935 town map shows housing, a rail line, river access and a small industrial zone. It records spatial arrangement at one point in time, not why every feature was built. / The collection contains little evidence from young people or workers displaced by later changes. That gap limits how complete the exhibition can be.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a curator statement for a four-item exhibition. State an interpretation, use different source types and acknowledge a missing voice or competing interpretation.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 · WEEK 1

Cell City

Maths: answers and methods

1. 210 km. Multiply map distance by scale: 7×30 .
2. 45 km. Multiply map distance by scale: 3×15 .
3. 18 sales. Contribution = \$4; $72 \div 4 = 18$. Round UP to whole sales.
4. 162 cm^3 . Volume = length $\times$ width $\times$ height. Use cubic units.
5. (2, 1); 3 left, 4 up. Add the horizontal and vertical changes separately.
6. 315 km. Multiply map distance by scale: 9×35 . A valid independent check, estimate or diagram is required.
7. $1,000\times$ Compare diagram size with real size using the same units: $60 \div 0.06 = 1,000$. The diagram is 1,000 times larger.

Reading: evidence-based guidance

1. Anchor the response in the passage: A cell is small, but it is not simple.
2. Compare these details: A damaged cell membrane model allows materials to move across the boundary without normal control. This links membrane structure to regulating exchange with the environment. / A fictional root-hair cell model has a long extension that increases surface area for absorbing water and mineral ions. The feature is linked to function rather than decoration.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain a cell as a connected system. Link named structures to their functions and explain how one failure could affect other parts.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 • WEEK 2

Powered by the Sun

Maths: answers and methods

1. 38, 46; term $n = 8n - 2$. Add 8 each time; the n th term is $8(n-1)+6$.
2. 19, 23; term $n = 4n - 1$. Add 4 each time; the n th term is $4(n-1)+3$.
3. 151/156 Use a common denominator for addition; divide by multiplying by the reciprocal.
4. 3 pages/min; 6 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
5. 24 and 16. 10 equal parts; each part is 4. Multiply each ratio number by this amount.
6. 14, 17; term $n = 3n - 1$. Add 3 each time; the n th term is $3(n-1)+2$. A valid independent check, estimate or diagram is required.
7. Oxygen output rises, but the increases become smaller at the highest light levels. Read the successive changes: +4, +4, +3, then +1 unit per minute. Output keeps rising, but each increase becomes smaller at the highest light levels.

Reading: evidence-based guidance

1. Anchor the response in the passage: Inside a leaf, chloroplasts contain chlorophyll that absorbs light.
2. Compare these details: In the fictional chamber model, medium light with correct water and normal carbon dioxide produces a positive starch test and 10 oxygen units per minute. / A fictional post says “plants get all their energy from soil”. Soil can supply water and mineral ions, but the claim confuses material inputs with the light-energy source captured during photosynthesis.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Explain how a plant obtains and uses energy. Include photosynthesis and respiration, one limiting input and a fair-test principle.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 • WEEK 3

Ecosystem: Critical

Maths: answers and methods

1. $10\% \text{ Increase} \div \text{original} \times 100 = 20 \div 200 \times 100 = 10\%$.
2. $20\% \text{ Increase} \div \text{original} \times 100 = 24 \div 120 \times 100 = 20\%$.
3. 38, 46; term $n = 8n - 2$. Add 8 each time; the n th term is $8(n-1)+6$.
4. 53/56 Use a common denominator for addition; divide by multiplying by the reciprocal.
5. 210 km. Multiply map distance by scale: 7×30 .
6. $15\% \text{ Increase} \div \text{original} \times 100 = 15 \div 100 \times 100 = 15\%$. A valid independent check, estimate or diagram is required.
7. 25% The decrease is $72 - 54 = 18$. Compare that decrease with the original 72: $18 \div 72 \times 100 = 25\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: Kōwhai Stream Reserve is a fictional monitoring site used for this investigation.
2. Compare these details: Before the pressure event, the fictional monitoring record shows water temperature 16°C , dissolved oxygen 9.0 mg/L, algae cover 18% and a sensitive-invertebrate index of 72. / A fictional post says “warm water killed everything in the stream”. The monitoring record does not support that absolute claim and does not isolate temperature from the other changes.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Explain the stream evidence. Connect a possible direct and indirect effect, use a numerical result and avoid claiming one cause without adequate evidence.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 · WEEK 4

Matter Lab

Maths: answers and methods

1. -5°C . $-3 + 4 - 6 = -5$. Use a number line if useful.
2. -10°C . $-6 + 6 - 10 = -10$. Use a number line if useful.
3. 54 cm^3 . Volume = length $\times$ width $\times$ height. Use cubic units.
4. $P(\text{red}) = 5/9$; $P(\text{not red}) = 4/9$. Count equally likely tokens, not colour names; probabilities add to 1.
5. Saving \$15.00; price \$35.00. Find the percentage of the original price, then subtract the saving.
6. -8°C . $-5 + 5 - 8 = -8$. Use a number line if useful. A valid independent check, estimate or diagram is required.
7. 14°C Moving from 6°C down to -8°C crosses 6 degrees to zero and 8 more below zero. $6 + 8 = 14^{\circ}\text{C}$ total decrease.

Reading: evidence-based guidance

1. Anchor the response in the passage: Matter can change even when we cannot see its particles directly.
2. Compare these details: The simplified solid model shows particles packed closely in an ordered arrangement, vibrating around positions rather than travelling through the whole sample. / The animated dots are not literal photographs of atoms or molecules. Their size, colour and spacing are exaggerated so patterns can be seen.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain solid, liquid and gas using particle arrangement and movement. Include heating and cooling, and explain why particles do not simply grow bigger.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 • WEEK 5

Heatwave

Maths: answers and methods

1. Cost \$5.68; change \$4.32. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
2. Cost \$5.16; change \$4.84. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
3. 3300 g; one portion 660 g. $1\text{ kg} = 1,000\text{ g}$; divide the converted mass by 5.
4. (3, -1); 3 left, 4 up. Add the horizontal and vertical changes separately.
5. 54 cm^3 . Volume = length $\times$ width $\times$ height. Use cubic units.
6. Cost \$5.32; change \$4.68. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10. A valid independent check, estimate or diagram is required.
7. 6.4°C Bare metal rises $15.0 - 6.0 = 9.0^\circ\text{C}$. Foam rises $8.6 - 6.0 = 2.6^\circ\text{C}$. The foam rise is $9.0 - 2.6 = 6.4^\circ\text{C}$ smaller.

Reading: evidence-based guidance

1. Anchor the response in the passage: During the fictional heatwave, the water supply begins cooler than the surrounding air.
2. Compare these details: A fictional 6°C water supply in 32°C surrounding air reaches 15.0°C after 20 modelled minutes in a bare-metal container with the lid closed in shade. / A fictional claim says “insulation prevents heat from entering at all”. The model supports a slower rate of transfer, not zero transfer.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Recommend a way to reduce heat transfer in the case. Compare two results, identify a controlled variable and state a limitation of the model.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 · WEEK 6

Force Lab

Maths: answers and methods

1. $x = 8$. Subtract 5, then divide by 5; check $5 \times 8 + 5 = 45$.
2. $x = 7$. Subtract 2, then divide by 8; check $8 \times 7 + 2 = 58$.
3. 1,000.00 (rounded to 2 d.p.). Divide coefficients and subtract powers: $(4 \div 4) \times 10^3$.
4. 15 percentage points; 37.5% relative increase. $55 - 40 = 15$ points. Relative change = $15 \div 40 \times 100$. These measures answer different questions.
5. 15 percentage points; 75.0% relative increase. $35 - 20 = 15$ points. Relative change = $15 \div 20 \times 100$. These measures answer different questions.
6. $x = 5$. Subtract 6, then divide by 7; check $7 \times 5 + 6 = 41$. A valid independent check, estimate or diagram is required.
7. 20 N forward Opposing forces subtract: 30 N forward – 10 N friction = 20 N net force forward.

Reading: evidence-based guidance

1. Anchor the response in the passage: The delivery cart is affected by more than the force pushing it forward.
2. Compare these details: With a 20 N forward applied force, 10 N opposing friction and a 10 kg model load, the simplified simulator gives a 10 N forward net force. / A fictional note says “balanced forces mean the cart must be stopped”. Zero net force means no acceleration; an object can also continue at constant velocity.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Explain balanced and unbalanced forces. Use the cart evidence, include a net-force calculation and identify a friction trade-off.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 · WEEK 7

Lost

Maths: answers and methods

1. 1.5 hours = 90 minutes. Time = distance $\div$ speed = $13.5 \div 9$. This assumes a steady speed with no stops.
2. 1.5 hours = 90 minutes. Time = distance $\div$ speed = $9 \div 6$. This assumes a steady speed with no stops.
3. 20 and 20. 10 equal parts; each part is 4. Multiply each ratio number by this amount.
4. $x = 6$. Subtract 2, then divide by 8; check $8 \times 6 + 2 = 50$.
5. Perimeter 30 cm; area 54 cm^2 . Perimeter = $2(\text{length} + \text{width})$; area = length $\times$ width. Units differ.
6. 1.5 hours = 90 minutes. Time = distance $\div$ speed = $7.5 \div 5$. This assumes a steady speed with no stops. A valid independent check, estimate or diagram is required.
7. 2 hours Time = distance $\div$ rate. $7.2 \text{ km} \div 3.6 \text{ km/h} = 2$ hours before adding any safety margin or delays.

Reading: evidence-based guidance

1. Anchor the response in the passage: The search map begins with a last-known position rather than a perfect live location.
2. Compare these details: The fictional team checked in at grid D3 at 13:10 before moving toward the northern track junction. / The map, forecast and travel-time estimates simplify reality and cannot guarantee track, water or weather conditions at every point.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a navigation brief. Compare the route or condition evidence, include a time calculation and explain when requesting support or turning back is appropriate.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 • WEEK 8

Build It Better

Maths: answers and methods

1. $10\% \text{ Increase} \div \text{original} \times 100 = 16 \div 160 \times 100 = 10\%$.
2. $20\% \text{ Increase} \div \text{original} \times 100 = 16 \div 80 \times 100 = 20\%$.
3. Mean 9; median 8; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
4. 70° . Angles in a triangle total 180° ; $180 - 50 - 60$.
5. 15 sales. Contribution = \$4; $60 \div 4 = 15$. Round UP to whole sales.
6. $15\% \text{ Increase} \div \text{original} \times 100 = 30 \div 200 \times 100 = 15\%$. A valid independent check, estimate or diagram is required.
7. 14 points Find the point increase: $86 - 72 = 14$. The stability score increased by 14 points.

Reading: evidence-based guidance

1. Anchor the response in the passage: The final prototype combines several subsystems.
2. Compare these details: The guided fictional transfer system begins with a light frame, standard motor and manual stop carrying a 20 kg load under normal conditions. The run provides a baseline for later comparisons. / A fictional design log says “I changed everything and the score went up”. Because several variables changed together, the log gives weak evidence about which change caused the improvement.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Write an engineering design record. State a criterion, compare baseline and revised performance, explain a weak point and name a remaining trade-off.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 • WEEK 9

System Failure

Maths: answers and methods

1. 15 percentage points; 33.3% relative increase. $60 - 45 = 15$ points. Relative change = $15 \div 45 \times 100$. These measures answer different questions.
2. 15 percentage points; 60.0% relative increase. $40 - 25 = 15$ points. Relative change = $15 \div 25 \times 100$. These measures answer different questions.
3. 90° . Angles in a triangle total 180° ; $180 - 50 - 40$.
4. Revenue \$180; profit \$50. Profit = revenue – variable costs – fixed costs = $180 - 100 - 30$. A negative result is a loss.
5. Mean 9; median 8; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
6. 15 percentage points; 75.0% relative increase. $35 - 20 = 15$ points. Relative change = $15 \div 20 \times 100$. These measures answer different questions. A valid independent check, estimate or diagram is required.
7. 42 percentage points Percentage-point change is direct subtraction: $100\% - 58\% = 42$ percentage points.

Reading: evidence-based guidance

1. Anchor the response in the passage: Station Kōwhai has several alarms, but the timing matters.
2. Compare these details: Main generation falls from 100% to 58% after a controller fault. Non-essential loads remain connected, so the battery reserve is being depleted faster than planned. / The station data is simplified and incomplete. Several faults could coexist, so the strongest diagnosis should stay proportional to the evidence.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Write an incident report. Trace a likely upstream failure through three effects. Prioritise two repairs and explain an uncertainty.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 1

Creator Studio

Maths: answers and methods

1. 36 and 16. 13 equal parts; each part is 4. Multiply each ratio number by this amount.
2. 20 and 24. 11 equal parts; each part is 4. Multiply each ratio number by this amount.
3. Circumference 31.40 cm; area 78.50 cm². Circumference = $2\pi r$; area = πr^2 . Radius is half the diameter.
4. 16 and 20. 9 equal parts; each part is 4. Multiply each ratio number by this amount.
5. 7 pages/min; 6 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
6. 16 and 20. 9 equal parts; each part is 4. Multiply each ratio number by this amount. A valid independent check, estimate or diagram is required.
7. 400 px The width is halved from 1,200 px to 600 px, so the height must also be halved. $800 \times 0.5 = 400$ px.

Reading: evidence-based guidance

1. Anchor the response in the passage: A designer can communicate an idea before the audience reads a single sentence.
2. Compare these details: A large high-contrast element placed away from competing detail is likely to become a visual focal point. / “Any cultural pattern can be used anywhere as long as it looks good.” This ignores context, ownership, tikanga and permission.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Compare two ways of communicating the same message. Explain deliberate choices of layout, words and medium for a stated audience.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 2

Design for Humans

Maths: answers and methods

1. Perimeter 30 cm; area 56 cm². Perimeter = 2(length + width); area = length × width. Units differ.
2. Perimeter 30 cm; area 44 cm². Perimeter = 2(length + width); area = length × width. Units differ.
3. 15 percentage points; 30.0% relative increase. 65–50=15 points. Relative change = $15 \div 50 \times 100$. These measures answer different questions.
4. Perimeter 36 cm; area 80 cm². Perimeter = 2(length + width); area = length × width. Units differ.
5. $x = 9$. Subtract 3, then divide by 8; check $8 \times 9 + 3 = 75$.
6. Perimeter 36 cm; area 80 cm². Perimeter = 2(length + width); area = length × width. Units differ. A valid independent check, estimate or diagram is required.
7. 3,600 cm² Area of a rectangle = width × height. $80 \text{ cm} \times 45 \text{ cm} = 3,600 \text{ cm}^2$.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional community information station has a large screen but still creates barriers.
2. Compare these details: The fictional display uses pale grey text on a pale background, making key information harder to distinguish. / A redesign proposal changes colours but does not address the identified access barrier.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a redesign brief. Identify two user barriers, propose two changes and set a measurable success criterion.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 3

Start Something

Maths: answers and methods

1. $30\% \text{ Increase} \div \text{original} \times 100 = 30 \div 100 \times 100 = 30\%$.
2. $15\% \text{ Increase} \div \text{original} \times 100 = 24 \div 160 \times 100 = 15\%$.
3. Cost \$4.92; change \$5.08. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
4. 6200 g; one portion 1240 g. $1 \text{ kg} = 1,000 \text{ g}$; divide the converted mass by 5.
5. 9400 g; one portion 1880 g. $1 \text{ kg} = 1,000 \text{ g}$; divide the converted mass by 5.
6. $10\% \text{ Increase} \div \text{original} \times 100 = 14 \div 140 \times 100 = 10\%$. A valid independent check, estimate or diagram is required.
7. $67.5\% \text{ Use part} \div \text{whole} \times 100: 27 \div 40 \times 100 = 67.5\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: Three fictional teams want to start something.
2. Compare these details: In a fictional event survey, 27 of 40 respondents say they have struggled to find activities or entrances at a large community event. / "I love this idea, so everyone else will too." Enthusiasm is useful motivation but not evidence of need.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Recommend one idea for a fictional venture. Explain the problem, intended users, value, feasibility and one assumption that needs testing.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 4

Price It

Maths: answers and methods

1. Revenue \$140; profit \$30. Profit = revenue – variable costs – fixed costs = 140 – 60 – 50. A negative result is a loss.
2. Revenue \$180; profit \$0. Profit = revenue – variable costs – fixed costs = 180 – 100 – 80. A negative result is a loss.
3. $P(\text{red}) = 2/5$; $P(\text{not red}) = 3/5$. Count equally likely tokens, not colour names; probabilities add to 1.
4. $15\% \text{ Increase} \div \text{original} \times 100 = 24 \div 160 \times 100 = 15\%$.
5. Cost \$5.12; change \$4.88. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
6. Revenue \$160; profit \$10. Profit = revenue – variable costs – fixed costs = 160 – 80 – 70. A negative result is a loss. A valid independent check, estimate or diagram is required.
7. \$26 Revenue = $20 \times 10 = \$200$. Variable cost = $20 \times \$7.20 = 144$; add \$30 fixed cost for 174 total cost. Profit = $\$200 - 174 = \26 .

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional pop-up product starts with a variable cost of \$6 per unit: \$4.50 for materials and \$1.50 for packaging.
2. Compare these details: The fictional product begins with \$4.50 materials and \$1.50 packaging per unit, giving a \$6 variable cost before the supplier change. / A proposed ad says “WAS \$18, NOW \$14” even though the product was never genuinely offered at \$18.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Write a pricing explanation. Distinguish revenue, fixed costs, variable costs and profit. Recommend a response to increased costs without hiding the trade-off.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 5

Future Tech

Maths: answers and methods

1. $P(\text{red}) = 2/3$; $P(\text{not red}) = 1/3$. Count equally likely tokens, not colour names; probabilities add to 1.
2. $P(\text{red}) = 9/14$; $P(\text{not red}) = 5/14$. Count equally likely tokens, not colour names; probabilities add to 1.
3. 75 km. Multiply map distance by scale: 5×15 .
4. 36, 44; term $n = 8n - 4$. Add 8 each time; the n th term is $8(n-1)+4$.
5. 1.5 hours = 90 minutes. Time = distance $\div$ speed = $13.5 \div 9$. This assumes a steady speed with no stops.
6. $P(\text{red}) = 2/3$; $P(\text{not red}) = 1/3$. Count equally likely tokens, not colour names; probabilities add to 1. A valid independent check, estimate or diagram is required.
7. 15% Use part $\div$ whole $\times 100$: $18 \div 120 \times 100 = 15\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional youth hub uses small automations for reminders and message triage.
2. Compare these details: IF a message is from an unknown sender AND contains a link, flag it for human checking instead of opening the link automatically. / "AI is objective because computers do not have opinions." Systems can still reflect data, design and measurement choices.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain a proposed automated task. State its inputs, rule, output, likely error and where a human should check the result.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 · WEEK 6

Prototype

Maths: answers and methods

1. 84 cm^3 . Volume = length $\times$ width $\times$ height. Use cubic units.
2. 54 cm^3 . Volume = length $\times$ width $\times$ height. Use cubic units.
3. 6 pages/min; 9 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
4. 270 km. Multiply map distance by scale: 9×30 .
5. $27/28$ Use a common denominator for addition; divide by multiplying by the reciprocal.
6. 135 cm^3 . Volume = length $\times$ width $\times$ height. Use cubic units. A valid independent check, estimate or diagram is required.
7. 600 cm^2 Area = length $\times$ width: $30 \text{ cm} \times 20 \text{ cm} = 600 \text{ cm}^2$.

Reading: evidence-based guidance

1. Anchor the response in the passage: A prototype is a question made physical or digital.
2. Compare these details: The fictional organiser must hold six items, fit inside a $30 \text{ cm} \times 20 \text{ cm}$ footprint and survive the same 10-second shake test. / A visual impression without a repeat test does not show whether the failure was fixed.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a prototype log. Explain the criteria, failure, proposed revision and how a controlled retest would show improvement.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 7

My Next Level

Maths: answers and methods

1. 8 pages/min; 15 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
2. 4 pages/min; 6 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
3. $20\% \text{ Increase} \div \text{original} \times 100 = 32 \div 160 \times 100 = 20\%$.
4. 9 sales. $\text{Contribution} = \$4$; $36 \div 4 = 9$. Round UP to whole sales.
5. 60° . Angles in a triangle total 180° ; $180 - 55 - 65$.
6. 3 pages/min; 18 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate. A valid independent check, estimate or diagram is required.
7. 100% Four sessions of 25 minutes use $4 \times 25 = 100$ minutes. $100 \div 100 \times 100 = 100\%$ of the available time.

Reading: evidence-based guidance

1. Anchor the response in the passage: A student preparing for Year 8 has several kinds of work in one week.
2. Compare these details: Closing the notes and explaining a process from memory reveals what is actually retrievable, then checking corrects errors. / "I am just not a maths person." A fixed label does not identify the strategy, prerequisite knowledge or support that might change performance.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a realistic study plan. Include retrieval, spacing, distraction management and help seeking. Explain how to adjust an unrealistic plan.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 8

Pitch It

Maths: answers and methods

1. 36 and 24. 15 equal parts; each part is 4. Multiply each ratio number by this amount.
2. 20 and 12. 8 equal parts; each part is 4. Multiply each ratio number by this amount.
3. -12°C . $-8 + 6 - 10 = -12$. Use a number line if useful.
4. Cost \$5.80; change \$4.20. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
5. $20\% \text{ Increase} \div \text{original} \times 100 = 32 \div 160 \times 100 = 20\%$.
6. 16 and 8. 6 equal parts; each part is 4. Multiply each ratio number by this amount. A valid independent check, estimate or diagram is required.
7. 25% Two minutes is 120 seconds. $30 \div 120 \times 100 = 25\%$, so one quarter of the pitch is reserved for evidence.

Reading: evidence-based guidance

1. Anchor the response in the passage: An audience cannot remember every detail of a project.
2. Compare these details: Your Term 4 project should be able to point back to a user, audience, problem or opportunity identified earlier. / “Everyone will love it” gives no sample, evidence or boundary for the claim.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Write a pitch for your term project. Include the need, proposed solution, one number, a test result or planned test, a limitation and a realistic next step.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 9

Launch

Maths: answers and methods

1. Revenue \$140; profit \$50. Profit = revenue – variable costs – fixed costs = 140 – 60 – 30. A negative result is a loss.
2. Revenue \$180; profit \$20. Profit = revenue – variable costs – fixed costs = 180 – 100 – 60. A negative result is a loss.
3. Perimeter 44 cm; area 112 cm². Perimeter = 2(length + width); area = length × width. Units differ.
4. 30 cm². Area = $\frac{1}{2} \times \text{base} \times \text{perpendicular height} = \frac{1}{2} \times 10 \times 6$.
5. 64 cm². Area = $\frac{1}{2} \times \text{base} \times \text{perpendicular height} = \frac{1}{2} \times 16 \times 8$.
6. Revenue \$160; profit \$30. Profit = revenue – variable costs – fixed costs = 160 – 80 – 50. A negative result is a loss. A valid independent check, estimate or diagram is required.
7. 8.3% Contingency = 18,000 – 16,500 = 1,500. $1,500 \div 18,000 \times 100 \approx 8.33\%$, so about 8.3% remains.

Reading: evidence-based guidance

1. Anchor the response in the passage: Kōwhai Junction is fictional, but its design problem resembles many real community decisions: limited money, several needs and incomplete evidence.
2. Compare these details: In a fictional 80-person survey, 46 select quiet study, 39 creative making and 37 low-cost recreation; respondents could choose more than one option. / A \$17,500 decoration refresh improves appearance but does not directly respond to the three most common use needs.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Write a launch recommendation. Balance evidence, cost and user needs. Include one implementation step and reflect on a change in your reasoning.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

FOUR PAPER PROJECTS

Project review & next steps

Term 1 • THE REALITY PROJECT

Accept a paper product with a focused question, correctly labelled evidence, a numerical comparison, a qualified conclusion and a record of revision. Evaluate the learner's reasoning and process rather than artwork or access to technology.

Term 2 • OUR PLACE • OUR STORY

Accept a paper product with a focused question, correctly labelled evidence, a numerical comparison, a qualified conclusion and a record of revision. Evaluate the learner's reasoning and process rather than artwork or access to technology.

Term 3 • RESILIENT SYSTEMS CHALLENGE

Accept a paper product with a focused question, correctly labelled evidence, a numerical comparison, a qualified conclusion and a record of revision. Evaluate the learner's reasoning and process rather than artwork or access to technology.

Term 4 • START SOMETHING

Accept a paper product with a focused question, correctly labelled evidence, a numerical comparison, a qualified conclusion and a record of revision. Evaluate the learner's reasoning and process rather than artwork or access to technology.

Term review answers

The six review prompts are reflective, not fixed-answer tests. Require specific references to weekly learning, a mathematically valid correction, and an achievable next step. A learner can identify uncertainty or a changed position as progress.